APPENDIX E

Storm Water Controls Screening Matrix (See Chapter 3).

Table E-i Legend for Table E-1 parameters.

✓	Meets suitability criteria
P	Primary Control
S	Secondary Control
O	Other, for use as quantity control or special applications
*	Unless resident water fowl are present; in that case, assume no removal (may be a source instead, pending further analysis)
**	Smaller area acceptable with adequate water balance and anti-clogging device
***	Drainage area can be larger in some instances
****	The application and performance of specific commercial devices and systems must be provided by the manufacturer and should be verified by independent third-party sources and data
a	For peak flow control only
b	Insufficent data to assign a value
c	Removal efficiency depends on specific device
d	Usually not applicable or determinable
e	Removal efficiencies depend on specific installation
f	Porous surfaces provide water quantity benefits by reducing the effective impervious area
g	Due to the potential for clogging, porous surfaces should not be used for the removal of sediment or other coarse particulate pollutants

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Table E-1 Overall Applicability

Category	On-Site Storm Water Controls	STORM WATER MANAGEMENT SUITABILITY				WATER QUALITY PERFORMANCE					SITE APPLICABILITY					IMPLEMENTATION CONSIDERATIONS			
		Water Quality Protection	Channel Protection	On-Site Flood Control	Downstream Flood Control	TSS/ Sediment Removal Rate	Nutrient Removal Rate (TP/TN)	Metals Removal Rate	Bacteria Removal Rate	Hotspot Application	Drainage Area (acres)	Typical Space Req'd (% Tributary Area)	Typical Facility Location Slope Limits	Typical Minimum Head Required	Minimum Bottom Depth to Maximum Water Table	Residential Subdivision Use	High Density/ Ultra Urban	Relative Capital Cost	Maintenance Burden
Ponds	Wet Pond	P	P	P	P	80%	55%/30%	50%	70%*	---	25 min	2-5%	15%	6 to 8 ft	5 ft unlined, 2 ft lined	✓	✓	Low	Low
	Wet ED Pond	P	P	P	P	80%	55%/30%	50%	70%*	---	25 min**					✓	✓	Low	Low
	Micropool ED Pond	P	P	P	P	80%	55%/30%	50%	70%*	---	10 min**					✓	---	Low	Moderate
Detention	Conventional Dry Detention	---	P	P	P	a	a	a	a	---	---	2-5%	15%	6 to 8 ft	5 ft unlined, 2 ft lined	✓	✓	Low	Moderate
	Extended Dry Detention	P	P	P	P	60%	35%/25%	25%	b	---	---	2-5%	15%	6 to 8 ft	5 ft unlined, 2 ft lined	✓	✓	Low	Moderate
	Underground Detention	---	P	P	P	a	a	a	a	---	__	---	---	---	---	---	✓	High	High
Channels	Enhanced Swales	P	S	S	S	90%	50%/50%	40%	b	---	5 max***	---	4%	1 ft	5 ft unlined, 2 ft lined	✓	---	Moderate	Moderate
	Grass Channel	P	---	S	---	30%	25%/20%	30%	b	---				---	---	✓	---	Low	Low
Infiltration	Infiltration Trenches	P	S	---	---	90%	60%/60%	90%	90%	---	5 max***	---	6%	1 ft	5 ft	✓	✓	High	High
	Soakage Trenches	P	---	---	---	90%	60%/60%	90%	90%	---	5 max***	---	6%	1 ft	5 ft	✓	✓	High	High
Filtration	Filter Strips	P	---	---	---	50%	20%/20%	40%	b	---	2 max***	---	1%-6%	-	---	✓	•	Low	Low
	Organic Filters	P	---	---	---	80%	60%/40%	75%	50%	✓	10 max***	---	---	2 to 3 ft	---	---	✓	High	High
	Surface Sand Filters	P	S	---	---	80%	50%/30%	50%	40%	✓	10 max ***	---	6%	2 to 3 ft	---	---	✓	High	High
Bioretention	Bioretention	P	S	S	S	85%	60%/50%	80%	b	---	5 max***	---	6%	3 to 5 ft	5 ft	✓	✓	Moderate	Moderate
Wetlands	Storm Water Wetlands	P	P	P	P	75%	45%/30%	50%	70%*	---	25 min**	---	8%	3 to 5 ft (shallow) 6 to 8 ft (pond)	5 ft unlined, 2 ft lined	✓	---	Moderate	Moderate
Proprietary Systems	Proprietary Systems	S	S	---	---	c	c	c	d	✓	****	---	---	---	---	****	✓	High	High
Gravity Separator	Gravity (Oil/Water) Separator	S	---	---	---	c	c	d	d	✓	1 max***	---	---	---	---	---	✓	High	High
Chemical Treatment	Alum Treatment System	S	---	---	---	c	c	c	d	✓	25 min	---	---	---	---	---	✓	High	High
Porous Surfaces	Green Roof	O	---	P	S	e	e	e	e	---	---	---	---	---	---	---	✓	High	High
	Modular Porous Paver Systems	O	---	S	S	f, g	f, g	f, g	f, g	---	5 max	---	---	---	---	✓	✓	Moderate	High
	Porous Pavement	O	---	S	S	f, g	f, g	f, g	f, g	---	5 max	---	---	---	---	✓	✓	Moderate	High

Table E-2 Specific Criteria

Category	On-Site Storm Water Controls	PHYSIOGRAPHIC FACTORS			SOILS	SPECIAL WATERSHED CONSIDERATIONS		
		Low Relief	High Relief	Karst		High Quality Stream	Aquifer Protection	Reservoir Protection
Ponds	Wet Pond	Limits maximum pool depth; providing pond drain can be problematic	Embankment heights may be restrictive	Requires geotechnical assessment and may require special construction techniques	Underlying soils of hydrologic group "C" or "D" usually adequate to maintain a permanent pool. Most group "A" soils and some group "B" soils will require a pond liner.	Check for possible thermal impacts of discharge	"A" soils and some "B" soils may require liner; 5 ft min separation distance from maximum water table for unlined ponds, 2 ft for lined ponds	Check for possible thermal impacts of discharge
	Wet ED Pond							
	Micropool ED Pond							
Detention	Conventional Dry Detention	Limits maximum pool depth; providing pond drain can be problematic	Embankment heights may be restrictive	Requires geotechnical assessment and may require special construction techniques	---	---	5 ft min separation distance from maximum water table for unlined ponds, 2 ft for lined ponds	---
	Extended Dry Detention					---		---
	Underground Detention			May not be allowed, depending on site-specific assessment	---	---	---	---
Channels	Enhanced Swales	Generally feasible however small slopes may lead to longterm standing water	May be infeasible due to excessive slope	---	---	---	---	---
	Grass Channels			---	---	---	---	---
Infiltration	Infiltration Trenches	Minimum distance to maximum water table of 5 feet	Slopes may be restrictive; trenches must have flat bottom	May not be allowed, depending on site-specific assessment	Infiltration rate should be >0.5 inch/hr	---	Maintain safe distance from wells per regulations; 5 ft min separation distance from maximum water table	---
	Soakage Trenches					---		---
Filtration	Filter Strips	---	---	---	---	---	---	
	Organic Filters	Design variations will likely be limited by low head	---	May not be allowed, depending on site-specific assessment	Facilities receiving fine (clay or silty) soils may require pretreatment to minimize maintenance	Check for possible thermal impacts of discharge	Must be designed with no exfiltration (i.e. outflow to groundwater)	
	Surface Sand Filters		---					Check for possible thermal impacts of discharge
Bioretention	Bioretention Areas	Design variations will likely be limited by low head	Slopes may be restrictive	May not be allowed, depending on site-specific assessment	Facilities receiving fine (clayey or silty) soils may require pretreatment to minimize maintenance	---	5 ft min separation distance from maximum water table	---
Wetlands	Storm Water Wetlands	---	Embankment heights may be restrictive	Requires geotechnical assessment and may require special construction techniques	"A" soils and some "B" and "C" soils may require pond liner	Check for possible thermal impacts of discharge	"A" soils and some "B" soils may require liner; 5 ft min separation distance from maximum water table for unlined, 2 ft for lined	Check for possible thermal impacts of discharge
Proprietary Systems	Proprietary Systems	---	---	---	---	---	---	---
Gravity Separator	Gravity (Oil-Grit/Water) Separator	---	---	---	---	---	---	---
Chemical Treatment	Alum Treatment System	---	---	---	---	---	---	---
Porous Surfaces	Green Roof	---	---	---	---	Check for possible thermal impacts of discharge	---	Check for possible thermal impacts of discharge
	Modular Porous Paver Systems	---	---	---	---	---	---	---
	Porous Pavement	---	---	---	---	---	---	---